CONFIDENTIAL INFORMATION

Inventor(s) Peterson
VCU Invention No. 98-11
Original
Modifications
Date Received
(office use only)

VIRGINIA COMMONWEALTH UNIVERSITY

INVENTION DISCLOSURE

Inventions may lead to new products and processes, and may bring research support, as well as royalty payments, to the inventor and the University. This VCU Invention Disclosure is intended to describe succinctly, but completely The invention, its use, and the inventors ideas for its commercialization.

Please use this form both for an initial disclosure and for any supplementary or changed information to a previously filed disclosure. For an initial disclosure, please complete all the questions you can, but realize that you may not be able to answer them all. For a supplement/change, please complete only the affected questions. All inventors should sign each disclosure form submitted. Use supplementary sheets whenever needed.

Each invention report will be reviewed to determine VCU's plan of action. The inventor will probably be contacted for more information. This process will take from one to six months, depending on the complexity of the situation.

THE INVENTION

1. TITLE OF INVENTION Duck Hepatitis B viral core Antigen As A Vaccine Carrier Moiety

2. Attach a concise description of the invention, which should be sufficiently detailed to enable one skilled in the art to understand and reproduce the invention, and should include construction, principles involved, details of operation and alternative methods of construction or operation. Attach drawings, photos, manuscripts, sketches that help describe the invention. Is it a new process, composition of matter, a device or one or more new products? It is an improvement to, or a new use for, an existing product or process?

3. What is novel or unusual about this invention? How does it differ from present technology? What are its advantages?
The use of both The core protein as a carrier and The immune-enhancing oligonucleotide

4. What is the closest technology currently available, upon which this invention improves?
Use of either alone

5. What disadvantages does this invention have? How can they be overcome?

Not Known

6. What uses do you foresee for the invention, both now and in the future?

possible vaccines for malaria
HCV and others

7. Has any commercial interst been shown in the invention? Please give company and individuals' names, and addresses if available.

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8. What other companies, or industry groups, might be interested in this invention, and why?

9. Please comment on any preferences or ideas you have for a good way to commercialize this invention.

10. What additional work is needed to bring the invention to a licensable state? Please estimate time and cost.

everything needs to be done.
6 months to demonstrate feasibility

TIMELINESS AND SPONSORSHIP

11. Has the invention been described in a "publication" (journal articles, abstracts, news stories, talks)? Please provide details including dates and copies of written material.

No

12. Do you plan to publish within the next six months? Please provide approximate date, and any abstract, manuscript, etc. available?

No

13. Dates of record, demonstrable from lab notebooks, correspondence, etc:

Earliest conception_____

First disclosure_____ to whom:_____

First reduction to practice_____

14. Please list all sources of support contributing to this invention:

University funds (dept. etc.)_____ Acct#_____

Sponsored funds: Sponsor_____ Acct#_____

Sponsored funds: Sponsor_____ Acct#_____

Sponsored funds: Sponsor_____ Acct#_____

THE INVENTOR(S)

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Signature			
Date			

ADMINISTRATIVE CERTIFICATION

16. (To be completed by Department Chairman, Program Director, or other Supervisor) I have reviewed the information provided above, with particular reference to the source(s) of funds contributing to the invention. To the best of my knowledge, I believe the above statements to be accurate.

Name

Title

Signature

Date

This is not an invention yet. This is the basis for thinking it might be an invention. None of this has been done yet.

We have previously shown that human Hepatitis B viral core antigen (HbcAg) can act as a carrier for foreign epitopes for possible vaccine usage. The HbcAg serves as a carrier for multiple copies of the epitope, since each core antigen contains over 200 individual protein molecules, each with an inserted epitope. In addition, the core antigen apparently has good immunogenicity enhancing properties.

We now propose to use the duck hepatitis core antigen instead. This is for the following reasons:

1. It is expected that duck core protein will have the same carrier properties as human HbcAg since they are quite similar structurally.

2. It is easily made in very large amounts by standard recombinant methods

3. It can be made in a truncated form, just as the human hepatitis core protein.

4. It differs from human HbcAg by having no inter-chain disulfide bonds.

It is this latter property that makes this an attractive alternative, that is amenable to modifications not readily performed with the human HbcAg, which is held together by 3 interchain disulfide bridges.

5. As with the human HbcAg, the duck core antigen has a carboxyterminal nucleic acid binding domain.

The proposed invention will:

1. Insert coding sequences into the duck core protein gene that will code for epitopes of important antigens (such as HBV, HCV, HIV, malaria). (This should work, since the same epitopes have already worked in the human HBcAg)

2. Replace the nucleic acids normally found in the duck core antigen with short oligonucleotides having the CpG motiff which has been shown to be immuno enhancing.

This can probably be done because the duck core protein is not held together by interchain disulfide bonds, and can be dissociated at high pH. The nucleic acids normally contained will then be digested with nucleases or displaced with high salt. Synthetic oligonucleides containing reported immuno-stimulatory activity (B cell) will then be added, and the core protein allowed

to reassemble at neutral pH.